REFERENCES

A Case of Transfusion Reaction due to Cytotoxic Anti-4b Leucocyte Antibody *

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SUMMARY

Two transfusion reactions are reported, one a febrile and the other an allergic reaction, in a patient with erythrocyte and leucocyte antibodies of known specificity.


It has been shown that leucocyte antibodies can cause febrile reactions in patients transfused with blood possessing the appropriate leucocyte antigens. The 4a/4b leucocyte antigens were first reported by Van Rood in 1961; the antibodies concerned were agglutinating only and it is only recently that a cytotoxic antibody was discovered that gave a high correlation with Van Rood's agglutinating sera.

We report here a transfusion reaction caused by a cytotoxic anti-4b antibody.

CASE REPORT

A 63-year-old woman blood group O, Rh-positive (Dce/dce) had her first blood transfusion of 2,25 litres of O Rh-positive blood in May 1966 for a gastro-intestinal haemorrhage. In May 1967 she received 1,75 litres of O Rh-positive blood for the same reason. She was re-admitted to hospital on 21 September 1968 with a further episode of melaena and haematemesis. Her haemoglobin fell to 8,5 g/100 ml. Transfusion was commenced with O Rh-positive blood (third transfusion), but after 200 ml the patient developed marked pain in her back, associated with rigors. Her pulse rate fell to 80/min and blood pressure rose to 180/100 mmHg.

Subsequent investigation showed that the patient had anti-E antibodies, but the transfusion she had received did not in fact have E antigen and the red-cell crossmatch had been negative by saline, Coombs' and papain techniques. The patient was then given CDe/CDe blood (fourth transfusion). After 2 units she developed a widespread eruption of itchy red weals which were controlled by antihistamines. The patient had no history of allergic phenomena such as asthma, rhinitis, eczema, or drug or food allergy.

Investigations

The patient's serum was tested for leucocyte antibodies by cytotoxic tests and by leuco-agglutination. The serum was also tested for antibodies against serum by gel immunodiffusion using 2 mobile phases. The donors of the various units of blood used in the transfusions were called to the Blood Bank and the leucocyte antigens were determined by cytotoxicity tests. Similar tests were performed on the patient's husband, son and daughter.

Results

The gel immunodiffusion tests did not demonstrate any antibodies against human serum. The agglutination tests were also negative but the cytotoxicity tests showed that the patient's serum contained a cytotoxic leucocyte antibody to a titre of 4.

The specificity of the antibody was determined by performing further cytotoxicity tests with lymphocyte suspensions from 145 donors and comparing these results with those obtained with sera of known specificity. The unknown antibody and Van Rood's anti-4b serum 110 (Smits) gave identical results in a panel of 145 donors. The leucocyte antigens of the patient, her husband, son and daughter and of the various units of blood that the patient received are shown in Table I.
Van psigo-normaliseerder tot die behandeling van psigosomatiese toestande is 'n logiese stap.
EGLONYL is die veilige enkelmiddel-behandeling vir peptiese ulkusse. Dit werk by die sentrale bron: in die middelbrein.

Die terapeutiese aktiwiteit van EGLONYL in psigotiese en neurotiese toestande is alreeds welbekend aan die mediese professie in Suid-Afrika. Hierdie voordele kan nou ook op die gebied van gastro-enterologie benut word, waar peptiese ulkusse van psigosomatiëse oorsprong 'n belangrike aanwysing vir die gebruik van EGLONYL is.

Die middel bied veilige en doeltreffende behandeling teen nuut gevormde peptiese ulkusse, sowel as chroniese ulkusse wat tot pilorus-stenose kan lei.

EGLONYL verlig duodenale ulkuspyn binne 'n paar uur, alleen of in verbinding met konvensionele behandeling in die akute stadium. Bewys is gelever dat dit in staat is om peptiese ulkusse, wat lank bestand was teen alle ander vorms van behandeling, te genees; dit is nuttig in stomale ulkusse wat na maagoperasies voorkom.

Die gastro-enteroloog en algemene praktisyn het in EGLONYL 'n enkele middel tot hulle beskikking wat nie net kragtige psigotrope eienskappe het nie, maar ook 'n selektiewe aktiwiteit op die centrale dele wat die spysverteringskanaal beheer.

Die merkwaardige lae voorkoms van newe-effekte en die goeie verdraagbaarheid van EGLONYL maak die langtermyngebruik daarvan wat dikwels in die behandeling van peptiese ulkusse nodig is, moontlik.

Die toediening van EGLONYL, met of sonder gekombineerde behandeling, soos die geneesheer verkies, sal akute ulkuspyn verlig en genesing bevorder.

NORISTAN LABORATORIA (EDMS) BPK, SILVERTON, PRETORIA
Vir verdere inligting oor EGLONYL m.b.t. voordele, aanwysings, verdraagbaarheid, newe-effekte, teenaanwysings en voorsorgmaatreëls en dosering is volledige literatuur van Noristan Laboratoria (Edms) Bpk beskikbaar.
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TABLE I. LEUKOCYTE ANTIGENS IN THE BLOOD OF THE PATIENT, HER HUSBAND AND FAMILY AND THE DONORS

<table>
<thead>
<tr>
<th>Antigen:</th>
<th>4a</th>
<th>4b</th>
<th>HLA1</th>
<th>HLA2</th>
<th>HLA3</th>
<th>HLA5</th>
<th>HLA7</th>
<th>HLA8</th>
<th>6a</th>
<th>6b</th>
<th>La17</th>
<th>La20</th>
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<tr>
<td>Patient</td>
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<td>Husband</td>
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<td>Son</td>
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<td>Daughter</td>
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<td>First transfusion (May 1966)</td>
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<td>Second transfusion (May 1967)</td>
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<td>Third transfusion (21 September 1968)</td>
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<td>Fourth transfusion (28 September 1968)</td>
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DISCUSSION

Both the son and daughter inherited the 4b antigen from their father, and so either of them could have sensitized the patient to this antigen. It is unlikely, however, that the patient had developed the antibody until after the second transfusion as there was no reaction to either of the first transfusions, although they both contained the 4b antigen. Furthermore, it is extremely unlikely that the transfusions alone would have caused the patient to develop a leucocyte antibody, so it is reasonable to assume that the antibody was the result of the combined effects of the two pregnancies and the transfusions with blood possessing the 4b antigen. By the time of the third transfusion the level of the antibody was high enough to react with the 4b antigen on the transfused leucocytes and to cause a febrile reaction. The blood used in the fourth transfusion did not possess the 4b antigen and there was no febrile reaction. The situation was confused, however, by the onset of an allergic reaction that was due not to the anti-4b leucocyte antibody but presumably to some other antibody that was not subsequently identified.

This case illustrates some of the problems that can be encountered in blood transfusion. Although the anti-E erythrocyte antibody had not been detected before the third transfusion, the blood administered did not contain the E antigen, hence the negative crossmatch. Therefore, the subsequent detection and identification of this antibody did not provide an explanation for the transfusion reaction. Instead, the reaction was in all probability caused by the anti-4b leucocyte antibody and the nature of the reaction was in keeping with such an explanation. Consequently, the provision of blood lacking the 4b antigen, as in the fourth transfusion, should have prevented a further reaction, but this was not the case as the patient developed a widespread eruption of itchy red weals.

This latter reaction was of the allergic type and was controlled by the administration of antihistamines, a procedure that would have no effect on a reaction caused by a leucocyte antibody. Furthermore, the reaction was not accompanied by the changes in pulse rate and blood pressure which had been marked features of the previous reaction. Unfortunately, the antibody causing this allergic reaction was not identified.

Thus we conclude that the patient possessed at least 3 separate antibodies, an anti-E erythrocyte antibody which was not involved in either transfusion reaction, an anti-4b leucocyte antibody that caused the febrile reaction experienced with the third transfusion, and an unidentified antibody that caused the allergic reaction associated with the fourth transfusion.

REFERENCES